

REMARKS

The Official Action mailed January 13, 2003 has been received and its contents carefully noted. Filed concurrently herewith is a *Request for One Month Extension of Time*, which extends the shortened statutory period for response to May 13, 2003. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on July 21, 2000 and July 8, 2002.

Claims 3-5 and 11-13 were pending in the present application. Claims 3-5 and 11-13 have been canceled and new claims 20-24 have been added to better recite the features of the present invention. Claims 20-24 are now pending in the present application, of which claims 20 and 24 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance.

Paragraph 5 of the Official Action requests a clarification of the specification with respect to the term "non-diffraction hologram pattern" and related terminology. Also, the Examiner has noted an apparent contradiction in the specification. In response, the specification has been amended to correct an error made in the *Amendment* filed January 14, 2002, namely the word "non-diffraction" has been changed back to "diffraction" which corresponds to the original disclosure. Since this term was supported in the original specification, no new matter has been entered. Further, the specification and Fig. 6B have been corrected in order to distinguish the diffraction hologram pattern shown in Fig. 6B (now given reference 104) from the non-diffraction hologram pattern shown, for example, in Fig. 2 (reference 14) and the intensity distribution of light incident upon a non-diffraction hologram pattern shown, for example, in Fig. 6A. The Applicants respectfully submit that a "non-diffraction hologram pattern" discussed in the specification and drawings, as amended, indicates an area of a predetermined thickness where there is not a pattern, relief, or stripes. This area may be made of glass. As such, it is respectfully submitted that the specification and drawings, as amended, are definite and clear to one with ordinary skill in the art, and that new claims 20-24 are fully supported by the specification.

Paragraph 6 of the Official Action objects to claims 3, 4, 11, 12 and 13 of the *Amendment* filed August 22, 2002, for allegedly introducing new matter into the

disclosure. In response, the Applicants have canceled these claims and added new claims 20-24. Although the objection is moot in light of the cancellation of the claims, the Applicants respectfully submit that the term "diffracted light" or "diffraction light" is supported by the specification and drawings, as amended, for the reasons stated above. Also, "diffraction light" is discussed in the specification in the paragraph bridging pages 18 and 19.

Paragraphs 8 and 9 of the Official Action reject claims 3-5 and 11-13 under 35 U.S.C. § 112, first paragraph. In response, the Applicants have canceled these claims and added new claims 20-24. Although the rejections are moot in light of the cancellation of the claims, the Applicants respectfully submit that for the reasons stated above new claims 20-24 are fully supported by the specification and drawings, as amended. Also, with respect to "an aberration to be caused by the hologram member," new claim 20 instead recites "an aberration to be caused by optical elements."

Paragraph 11 of the Official Action rejects claim 5 as anticipated by U.S. Patent No. 5,450,378 to Hekker. The Applicants respectfully submit that an anticipation rejection cannot be maintained against new claims 20-24 of the present invention. Hekker does not teach all the elements of the independent claims, either explicitly or inherently. Hekker discloses an optical recording/reading system having holographic optical elements 103 and 104 designed so that the intensity of an optical spot is uniform. The optical spot is formed by the reflection of light by the holographic optical elements 103 and 104. Thus, the reference fails to disclose that the light for the optical spot penetrates the holographic optical elements, as recited in new claim 20 of the present invention. Since Hekker does not teach all the elements of the independent claims, either explicitly or inherently, an anticipation rejection cannot be maintained.

Paragraph 13 of the Official Action rejects claims 3-4 and 11-13 as obvious based on the combination of U.S. Patent No. 5,828,643 to Takeda et al., U.S. Patent No. 5,016,954 to Onayama et al., and U.S. Patent No. 5,473,471 to Yamagata et al. The Applicants respectfully submit that a *prima facie* case of obviousness cannot be maintained against new claims 20-24 of the present invention.

As stated in MPEP §§ 2143-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available

to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of new claims 20-24. Takeda, Onayama and Yamagata do not teach or suggest that diffraction light is given an inverse aberration of an aberration to be caused by optical elements. Regarding this feature, the Official Action asserts without a prior art reference that designing and recording a holographic optical element having diffraction grating to correct aberrations of other optical elements in the device are extremely well known and standard practice in the art (p. 7, Paper No. 15). In accordance with MPEP § 2144.03, the Applicants respectfully traverse the above-referenced assertion and request that the Examiner cite references in support of his position.

The Applicants respectfully submit that correction of an aberration performed with a multi-beam pickup having a hologram is not conventional and would not have been known to one with ordinary skill in the art at the time of the invention. Kenwood, the Assignee of the Applicants, first invented such a multi-beam pickup. Based on this fact, corresponding Japanese, European, and Korean applications defining the invention recited in new claim 20 have now been patented as JP 3362768, EP 1060472 B1, and Korean Patent 0368493. Thus, the Applicants respectfully submit that the present invention is not obvious from the references cited, alone or in combination, and likewise the present invention should be allowed. Since Takeda, Onayama and Yamagata do

not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace the paragraph bridging pages 18 and 19 with the following:

Figs. 6A to 6C are graphs and a diagram illustrating a method of improving tracking servo light spots. Light transmitted through the non-diffraction hologram pattern 14 shown in Fig. 2 is used for reading data on a track of the optical disk as well as for tracking servo. A light spot 24 as a tracking servo light spot is required to have a uniform intensity over the whole area of the spot. However, as shown in Fig. 6A, the intensity distribution of light incident upon the non-diffraction hologram pattern 14 of the hologram module 13 from the real laser light source 11 has a mountain shape with an apex at its center. This intensity distribution can be improved by using a phase hologram pattern. Namely, the deeper the groove of a phase hologram pattern, the more the amount of non-diffraction light (0-th order light) can be reduced and the more the diffraction light amount can be increased by using the reduced amount of non-diffraction light as the diffraction light. Further, the more the width of a valley (groove) is made equal to the width of a hill (non-groove), the more the amount of 0-th order light can be reduced and the more the diffraction light amount can be increased by using the reduced amount as the diffraction light. As shown in Fig. 6B, the depth of the groove 54 is made smaller at the position remoter from the optical axis center to thereby reduce the amount of 0-th order light and direct the reduced amount of light toward different directions. Instead of adjusting the depths of grooves 54, the depths of grooves 54 may be made equal and the ratio of each non-groove width to a total width of each pair of adjacent groove 54 and non-groove is set as $a_1 > a_2 > a_3 > a_4 > a_5 > a_6, \dots, > a_n$, where $a_1, a_2, a_3, a_4, a_5, a_6, \dots, a_n$ are ratios at positions from a near position to the optical axis center to a far position therefrom in this order. In the above manners, as shown in Fig. 6C, the light intensity distribution can be made uniform in some range about the optical axis center in a radial direction. By using the [non-diffraction] diffraction hologram pattern [14] 104 having grooves 54 such as shown in Fig. 6B, the intensity distribution of incident light can be made flat. If a tracking servo signal is

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generated from reflected light of a light spot formed by such uniform intensity light, this tracking servo signal is stable even if the objective lens is subject to a tracking shift.